IN THE CLAIMS:

1. (currently amended) A washing machine comprising:

a tub;

a resistance network comprising a sensor, a resistor, and a voltage source, said sensor positioned and configured to sense a conductivity of a fluid in said tub, said voltage source operable to provide one of a sinusoidal wave input and a square wave input to said sensor to facilitate deterring mineral buildup on said sensor; and

a controller operatively coupled to said sensor and configured to control an amount of the fluid in said tub during a rinse cycle based on the conductivity of the fluid measured at an end of a wash cycle, said controller comprising a microcomputer programmed to:

determine a desirable achievable rinse level;

at predetermined ~~water~~ fluid levels during the rinse ~~operation~~ cycle, measure an average liquid conductivity;

calculate an overall change in conductivity based on the measured average liquid conductivity at each predetermined ~~water~~ fluid level;

compare the calculated overall change in conductivity to the desirable achievable rinse level; and

cease the rinse ~~operation~~ cycle when the overall change in conductivity exceeds an acceptable change percentage of the desirable achievable rinse level.

2. (previously presented) A washing machine according to Claim 1, wherein said sensor is positioned within said tub.

3. (previously presented) A washing machine according to Claim 1, wherein said sensor is positioned outside said tub.

4. (previously presented) A washing machine according to Claim 1, wherein said sensor is configured to sense an initial conductivity of the fluid during the wash cycle without detergent.

5. (previously presented) A washing machine according to Claim 4, wherein said sensor is further configured to sense a final conductivity of the fluid after the wash cycle with detergent.

6. (previously presented) A washing machine according to Claim 5, wherein said microcomputer is programmed to determine a desirable achievable rinse level by calculating the difference between the initial conductivity and the final conductivity.

7. (previously presented) A washing machine according to Claim 1, wherein said microcomputer is programmed to measure the conductivity of the fluid sensed by said sensor during the wash cycle without detergent and during the wash cycle with detergent.

8. (currently amended) A washing machine according to Claim 7, wherein said microcomputer is programmed to measure the conductivity of the fluid sensed by said sensor over at least a [[3]] three second period.

9. (previously presented) A washing machine according to Claim 7, wherein said microcomputer is programmed to calculate an overall change of conductivity of the fluid.

10. (previously presented) A washing machine according to Claim 9, wherein said microcomputer is programmed to compare the overall change of conductivity with a desirable achievable rinse level.

11.-23. (canceled)

24. (new) A washing machine comprising:

a tub;

a resistance network comprising a sensor, a resistor, and a voltage source, said sensor positioned and configured to sense a conductivity of a fluid in said tub; and

a fluid delivery and draining assembly coupled in communication with said resistance network, said fluid delivery and draining assembly configured to control an amount of the fluid in said tub during a rinse cycle based on the conductivity of the fluid measured at an end of a wash cycle, said fluid delivery and draining assembly further configured to:

channel fluid into said tub;

at predetermined fluid levels within said tub during the rinse cycle, measure an average liquid conductivity;

calculate an overall change in conductivity based on the measured average liquid conductivity at each predetermined fluid level;

compare the calculated overall change in conductivity to a desirable achievable rinse level; and

cease the rinse cycle when the overall change in conductivity exceeds an acceptable change percentage of the desirable achievable rinse level.

25. (new) A washing machine according to Claim 24, wherein said sensor is configured to sense an initial conductivity of the fluid during the wash cycle without detergent.

26. (new) A washing machine according to Claim 25, wherein said sensor is further configured to sense a final conductivity of the fluid after the wash cycle with detergent.

27. (new) A washing machine according to Claim 26, wherein said fluid delivery and draining assembly is configured to determine a desirable achievable rinse level by calculating a difference between the initial conductivity and the final conductivity.

28. (new) A washing machine according to Claim 24, wherein said fluid delivery and draining assembly is configured to measure the conductivity of the fluid sensed by said sensor during the wash cycle without detergent and during the wash cycle with detergent.

29. (new) A washing machine according to Claim 28, wherein said fluid delivery and draining assembly is configured to measure the conductivity of the fluid sensed by said sensor over at least a three second period.

30. (new) A washing machine according to Claim 28, wherein said fluid delivery and draining assembly is configured to calculate an overall change of conductivity of the fluid.

31. (new) A washing machine according to Claim 30, wherein said fluid delivery and draining assembly is configured to compare the overall change of conductivity with the desirable achievable rinse level.

32. (new) A washing machine according to Claim 24 wherein said voltage source is operable to provide one of a sinusoidal wave input and a square wave input to said sensor to facilitate deterring mineral buildup on said sensor.